UPPER MISSISSIPPI RIVER NINE-FOOT CHANNEL PROJECT-OPERATION AND MAINTENANCE SECTION 7 CONSULTATION PALLID STURGEON

A) Species History

- ! Listed as endangered in 1990; Recovery Plan developed in 1993
- ! Large river fish adapted to braided channels, irregular flow patterns, flood cycles, turbid waters and areas with extensive microhabitat diversity
- ! Likely occurred as a reproductively connected population from the Upper Missouri River to the Gulf of Mexico
- ! Primary cause of species decline is habitat modification
- ! Other factors: commercial fishing, pollution & contaminants, hybridization
- ! Species now occurs in reproductively isolated populations across the range of the species:

1) Upper Missouri River - Primarily only large, old fish (characterized as senescent); many small reproductively isolated subpopulations; largest population estimated at 200-300 individuals; specimens collected in reproductive condition, but no evidence of natural reproduction has been recently found; habitat altered by impoundments

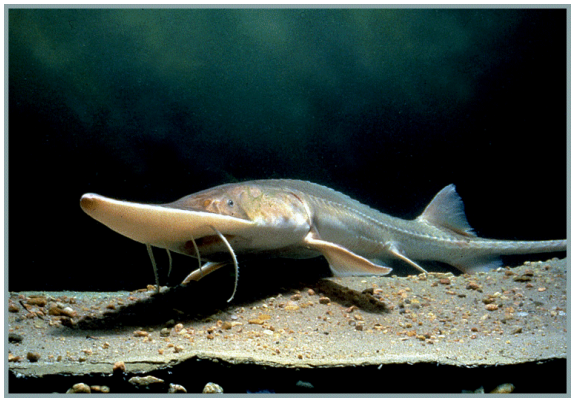
2) Lower Missouri River/Middle Mississippi River/Lower Mississippi River - Reproductively/genetically connected pallid sturgeon population; unknown population size; high incidence of hybridization; habitat highly degraded due to channelization; evidence of natural reproduction

! 1998 - a young-of-the-year pallid sturgeon was collected in the Middle Mississippi River ! 1999 - larval pallid sturgeon were collected in the Lower Missouri River ! 2000 - larval pallid sturgeon were collected in the Middle Mississippi River and the Lower Mississippi River

3) Atchafalaya River/Old River Control Structure - Population (including hybrids) estimated at 2750-4100 fish; population with diverse age structure, but no recent evidence of reproduction (e.g., youngest age class from 1988); high incidence of hybridization; Females captured in reproductive condition

B) Effects of Continued Operation and Maintenance Considered in the Biological Opinion

- ! Direct Effects
  - 1) Water level regulation
  - 2) Impoundment
  - 3) Dredging and Disposal
  - 4) Channel Training Structures/Revetment
- ! Indirect Effects
  - 1) Tow traffic
  - 2) Fleeting
  - 3) Contaminants
- ! Interrelated Effects
  - 1) Open River Enhancement Project
- ! Interdependent Effects



1) Missouri River Bank Stabilization and Navigation Project

! Cumulative Effects

1) Commercial harvest of shovelnose sturgeon

C) Project impact to Species

! Continued alteration and disruption of dynamic, natural river processes that create and maintain habitat

! Continued loss of habitat quality, quantity and diversity resulting in:

•Reduced spawning habitat, thus, reduced reproductive success and/or increased incidence of hybridization

•Reduced availability of larval and juvenile rearing habitat

•Reduced availability of seasonal refugia for all life stages

•Reduced availability and quantity of forage food

! Potential mortality of juvenile sturgeon

! Continued reduced sediment transport:

•Reduced habitat and substrate diversity

•Increased predation

•Increased competition

•Decreased foraging capability

! Continued blocked migration routes:

•Reduced availability of pallid sturgeon and shovelnose sturgeon spawning habitat

•Increased incidence of hybridization

! Continued nutrient cycling disruption:

•Reduction in natural forage base

! Continued transference and homogenization of contaminants:

•Impaired reproductive success

•Reduced fish health

D)Why Jeopardy?

! MMR represents an important genetic conduit between the Lower Missouri River and the Lower Mississippi River. Impacts to the MMR influence pallid sturgeon populations in both of these river sections, (i.e., the area of impact if much greater than just the MMR). Changes in the MMR affect the population viability of pallid sturgeon in the Lower Missouri and Lower Mississippi Rivers, and thus, influence survival and recovery of the entire Lower Missouri River-MMR-Lower Mississippi population unit.

! MMR represents a significant portion of 1 of 6 designated recovery priority management areas. These areas provide the greatest opportunities for successful recovery. Thus, loss or further degradation of any such areas will substantially compromise recovery efforts and likely the survival of the species.

! MMR represents an area that is currently known to be utilized by larval/young-of-the-year pallid sturgeon and is one of only a few areas in which some natural reproduction may be occurring.

! MMR represents approximately 10% of the species' range that is believed to have suitable habitat (e.g., somewhat unaffected by impoundments).

! Habitat loss is the primary factor threatening the survival and recovery of the species. Continued O&M will result in further habitat degradation and loss to the extent that the suitability of the MMR for pallids will be lost.

! Although the effects will have the greatest influence on the MMR, the proposed project will substantially impact pallid populations in the Lower Missouri and Lower Mississippi Rivers (as explained above). That is, the proposed project will adversely affect the core of pallid range; hence, appreciably reduce the likelihood of both the survival and recovery of the species.

E) RPA

! Habitat loss and alteration due to the continued operation and maintenance of the Nine-Foot Channel Project are likely to jeopardize the continued existence of the pallid sturgeon.

! Destruction and alteration of habitats due to modification of the river system is the primary cause of the pallid sturgeon decline (i.e., due to declines in reproduction, growth and survival).

! The recovery plan calls for restoring the functions of the large-river ecosystem. The broad habitat needs of pallid sturgeon suggest that only large-scale, system-wide habitat protection and improvement programs can be expected to provide significant benefits for species threatened by habitat alteration.

! Therefore, to avoid jeopardizing the continued existence of the pallid sturgeon, while continuing operation and maintenance of the 9-foot channel, further net loss or degradation of habitat during the 50 year project life must be prevented. This will require:

- A comprehensive pallid sturgeon habitat study to better characterize spawning habitat and seasonal and various life stage use in the MMR
- Development of a pallid sturgeon conservation and restoration plan
- Implementation of a long-term aquatic habitat restoration program to mitigate the future adverse effects of O&M
- Implementation of short-term aquatic habitat restoration measures and studies

F) RPM's

! New construction projects will require individual Section 7 consultation
! Dredged material will be disposed of in the thalweg of the channel, unless otherwise utilized for habitat restoration or other beneficial use
! Dredging will occur outside the presumed window of pallid sturgeon reproduction (12 April - June 30)
! Live pallid sturgeon caught in sampling gear will be released
! Data collected with implementation and monitoring of the RPA will be utilized to further develop measures to minimize incidental take

G) Current status of Section 7 Consultation

! Biological Opinion provided to the Corps of Engineers in May 2000

! Corps of Engineers' implementation letter provided to the Service in August 2000

! The St. Louis District, Corps of Engineers has assembled a pallid sturgeon expert team which developed a draft Plan of Study for pallid sturgeon research and monitoring in the MMR. The draft Plan of Study is titled "Habitat Preference and Demographics of Pallid Sturgeon Populations in the Middle Mississippi River" and includes the following components:

**Pallid sturgeon are the focus of this study, however, shovelnose sturgeon will be included in field measurements and data analysis

- Measure habitat utilization by life stage and season
- Evaluate habitat preference based on macrohabitat availability
- Quantify demographic parameters including mortality, density, age and growth
- Evaluate diet and food preferences

! The draft Plan of Study was provided to the Service and state resource agencies for comment in March 2000.

! The Service solicited comments on the draft Plan of Study from members of the Middle Basin States Pallid Sturgeon Recovery Workgroup and then submitted comments to the Corps in April 2000.

! The Corps of Engineers is developing a biological assessment to address the effects of emergency dredging (i.e., dredging during the 12 April - 30 June time frame)

! Several side channel rehabilitation and enhancement projects are in various stages of planning for construction under several Corps' authorities. It is likely that planning for the Schenimann Chute Habitat Rehabilitation and Enhancement Project will be completed this year. The Corps has completed a micro-model for a side-channel creation project near the Jefferson Barricks bridge.

! A dike alteration project is being planned for implementation as a Habitat Rehabilitation and Enhancement Project under the Environmental Management Program

! The Corps of Engineers has planned a woody debris experimental project under the Avoid and Minimize Program. This project is slated for construction in fiscal year 2001.

! The Corps of Engineers is continuing to fund a pallid sturgeon telemetry study as part of the Avoid and Minimize Program. Information collected from this on-going research will likely supplement information collected in the habitat preference study.